Notebook Series -- Notebooks by Edison and Other Experimenters
Battery Experiments
Notebook, N-14-06-02

This non-standard notebook, which covers the period May-October 1914, consists of approximately 70 pages of loose notes that were at one time fastened together. Most of the notes are by Edison and Harold H. Smith, chief of the Battery Research Department. There are also notes by James F. Monahan, superintendent of the Edison Storage Battery Co., and by employees Harry C. Leonard and Robert Saville. The material relates primarily to experiments aimed at the rejuvenation or regeneration of used battery components. These experiments were performed under Edison's direction on iron from old negative electrode "pockets." The pockets were often reconstructed with treated iron. The experiments are related to the work in N-14-04-26 and N-14-12-03, Notebooks by Edison.

Approximately 70 percent of the book has been selected. The selected material pertains to the experiments (identified by "TAE" numbers) performed under the direction of Edison. The unrelated tests at the beginning of the book (identified by "Silver Lake"numbers) have not been selected.

6/23/16

N.C.

Put following Jc Experiments on
Lid test

TAE No. 156

1902

1902 A

1902

1902 A

232 - 238 inc.

H.H. Swift

CIT

6/26/14

W.C.

Cut out the following Ex.

experiments

Ex. No.

153

157

162

163

166

168

156A

212 - 230 inclusive

[illegible]

6/27/10

The Experiment

No. 239

1st run	300 ma	1030-990	
2nd "	"	1335-2075	
3rd "	"	1315-2100	

The Experiment 6/29/14.

No. 239

4th run 1475 - 2245

Will assemble 1st cell with new Tis. Cell examined but appears O.K.

Record of 239 continued on large sheet.

6/29/14.

H.C.

Assemble Jc Exp. 189 (J.G.E. No. 239) with new his. It's running very much down than its mate.

H.H.S.

[5]

Dwelle
Run these pockets
several times more
and send data
Mr. Edison — accumulator

348 E

July 25-1914

Edison Storage Battery Co.
JUL 27 1914
RESEARCH DEPT.

You asked us to put some Fe that was low, on 10 hot runs. We have done this with the pocket of Mix 2972

Before hot runs

At 750 ma.	1300 - 1187 - 1000 - 1000
" 400 "	1833 - 1700 - 1687 - 1707
Hot capacity (450 ma.)	1300 - 1185 - 1190 - 1150

After hot runs

At 750 ma.	775 - 650 - 987 - 462
" 400 "	1255 - 1870 - 1270 - 560

We are holding these pockets in case you want them for examination or other purpose.

Smith.

[6]

Smith

Make up right away

(2) 4 pockets of 2972 Mix Fe

with Otts No 4 die

don't Corrugate

439 8 150-148

440 8 149-148

(2) Also 4 with Otts

No 2 Die - 437 8 137 136

438 8 138 137

Smith -

Please answer inquiry about that batch of red iron that gave the bad results sent today =

Also send me over 3 or 4 ounces —

Feb. 29 72

(X)

7/27/12.

Mr. Edison -

Fe No. 2972 has been used in regular cells. Have handed your note to Mr Buchman for attention as per your request.

Mine all used up except I was able to get 6 pockets for use with Fred Ott's disc. You called for 4 each - can only make 2 each.

Cannot get the sample you want. Will be over soon to see you about it.

Smith.

[9]

Eastman Kodak Company
AUG 3 1914
RESEARCH DEPT.

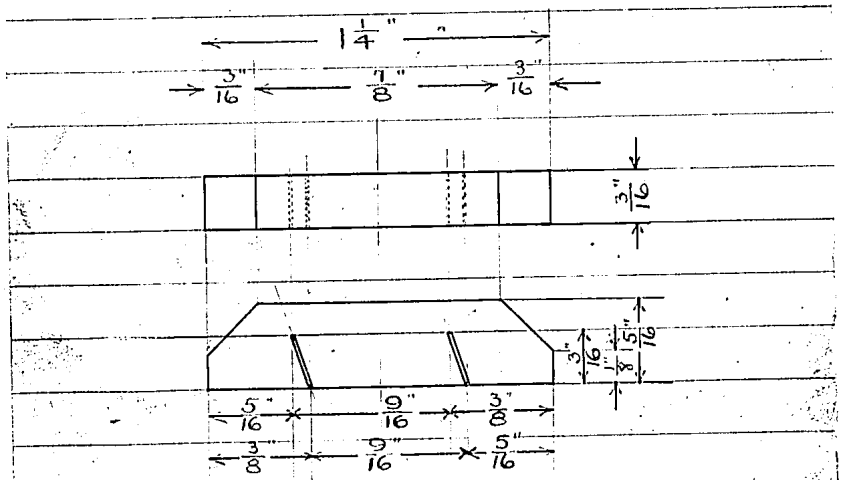
347 E

to the pressure

device pocket

8/2/.5.

Special Hard Rubber Insulators



8 wanted. Scale - Double size.

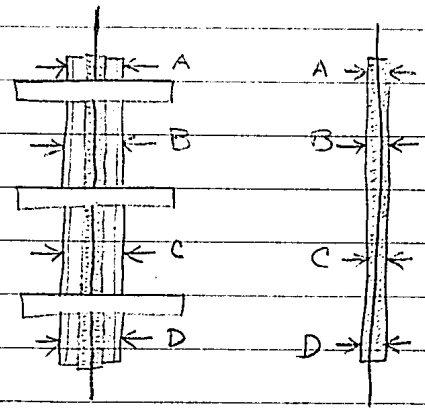
Please rush!

S.H. Smith

CWS

347 E

Pocket 449 E in frame
" 450 E not in frame



Calipers

Before Test	449E	450E
A	.3650	.1215
B	.3620	.1195
C	.3617	.1217
D	.3645	.1235

C121

#3 8 E

8/7/

Box Time 2972

	Shell No. 1997-2000	1	2	3	4	5	6	7	8
					750 ma.				
Regular	1999	2333	1867	1753	1037	1087	1000	1713	1687
"	2000	2487	2000	1933	1100	1187	1000	1680	1707
"	2001	2833	1967	1873	1037	1000	1037	1847	1813
"	2002	2380	1780	1687	900	837	850	1680	1620
Eff No. 2 Die	437	2587	2193	2277	1412	1400	1537	2253	2087
"	438	2580	2247	2320	1500	1500	1600	2387	2360
Eff No. 4 Die	439	2593	2393	2437	1600	1650	1637	2487	2480
"	440	2620	2400	2493	1725	1775	1837	2747	2660

6133

8/8/12

Received memo from KEE.
asking if any pressure used before
Ott's die. Replied no but of course
slight pressure on pocket with No. 2
die.

[Aug 10]

Smith –

Take 343 E & 344 E

& Run them ~~as~~ same as you run Reg crows 3 at normal 3 at 750 rate, ~~the~~ & then keep on running at normal till I tell you to put on hat –

[illegible]

Aug. 10, 1914

Experiments

Mr. Edison -

I note per your memo. that you want 343 E and 344 E. on regular Je schedule, that is,

3 at normal rate

3 " 750 "

Then normal until you order them on hot.

They have already had 7 normal runs so I am putting them on at 750 now.

Smith

[15]

Smith

Hoey succeeded

345E 346E from

McCer —

	345	346
1	65-50	75-100
2	less than 300	" : 260-320
3	730-690	230-915

Aug 25/24

Mr McMahon.

[illegible] Spark Gap [illegible]
for [illegible] Sp. Gap [illegible]
that have negative plate [illegible]
with [illegible]

To Mic # 3011 [illegible] the
[illegible] on [illegible] battery [illegible]
on [illegible] [illegible]
capacity being about 1500 M-A-H.

Cell #	Run # 1		Run # 2	
	1. Volt	.5 Volt	1 Volt	.5 Volt
Sp 62	201.5	206.5	173	182.7
Sp 63	202	207.5	173.5	183

Kennard Dept.

Saville
Results of Chavelesh
Should be sent to me as
Mr. Edison well as all others.

Aug 31

Cells #62 - #63 [illegible]
I have seen nothing
negative found with new die - completely
The electrical results cannot be [illegible] as
those obtained on single test. And
think that this is due to poor [illegible]
I could not procure from the Chemical Works
enough of the same mix as we used
on your single test pockets. And
find that mix #3011 which cells #62 - #63
contain did not run over 1500 M.A.H.
pocket loaded at Silver Lake.
We have two cells of #3011 mix pressed
in regular way - corrugated die on test
will send you this report when complete

Respt.

Mrahan

[18]

Aug 31 [illegible]

Fe [illegible] #[illegible]

[illegible] (#4)

	Cell Sp. #62.		Cell Sp. #63.	
	1 Volt	.5 Volt	1 Volt	.5 Volt
Run 1	201.5	206.5	202	207.5
Run 2	175	182.7	175.5	183.

Pg for Corrugated Dec.

	Cell 9210.B		Cell 9211.B.	
	1 Volt	.5 Volt	1 Volt	.5 Volt
Run 1	211.5	220.	209.	216
Run 2.	185.	196.5	187.5	193.7

Saville

[illegible]

Aug 31st 1914.

Spread 7½ Mine #2107

	1 Volt	·5 Volt	1 Volt	·5 Volt
Run 3	181·5	184	171·5	183·2
" 4	175	176·4	175	177·5
" 5	168·7	174·2	167·2	172·2
" 6	159		159	
" 7	170		169·2	
" 8	169·5		168·5	
" 9	164·5		170·5	

Spread 7½ Mine #2106. (4·7 Hg)

	1 Volt	·5 Volt	1 Volt	·5 Volt
Run 3	174	181	176	182·5
" 4	166·2	173·7	167·5	173·7
" 5	165	174	165	174
" 6	155		157·5	
" 7	166·2		166·2	
" 8	163·5		165	
" 9	157·5		160.	
"				

Wednesday
Have 2109 &
worked 2106

Sept 1 st. 1914.

Quith

Mark these cells
with my number

Special Fe. Misc #2109.
" " " 2106.

Reported yesterday up to-date.

Fe. Misc #3011.
Ott die (#4.)

F 253

		1.Volt.	.5 Volt.
Sp. #62	RUN 3	165	178.
" #63	" "	161.5	177.5.

Reg. Corrugated Die.

		1.Volt.	.5 Volt.
9210 B.	RUN 3	172.5	183.
9211 B.	"	170.	181.2.

F 254

Savich

(31)

9/3/1

S/C

Until further notice run
H Expts VA E. Nos 335-336 E
at 35° F. Otherwise normal
AHS.

Single B Fe plates
from J. F. M.

Edison Storage Battery Co.
SEP 10 1914
RESEARCH DEPT.

333 Ex

✓ Press 2 B+ Plates with Ott #4 Die

334 Ex

Press 2 B+ with old convex die
✓ first then crimp with Ott #4
die

335 Ex

2 B+ Plates with Ott #4 die first,
then press with flat die

336 Ex

Press 2 Plates in Ott #4 Then
✓ corrugated in old regular corrugating
die

Above is copy of Mr. Edison's note
to Fred Ott or Monahan.

(23)

Fred Ott =

Make 6 = pockets, 7 grams
Each irregular iron mix #3050
with roller # 4 die + reflorum
press with flat die –
Tell Smith to use 2
+ give first 5 runs hot at
130 fahr + then run normal
+ number these 2 – #362 E

The other 2 pockets are to
be run 1st 5 Runs cold
35° fahr + then run normal
+ marked 363 E

[34]

The 3rd 2 are to be
run 5 runs at ~~[illegible]~~
ordinary temperature first
at 800 rate then run
normal — Mark 365E

125

Je.

Smith —

Discharge the two No 333 E to Zero + send Cells to Fred Ott —

Pockets cut away here by Fred Ott + cells put in regular sum.

LOUISVILLE NASHVILLE RAILROAD CO. SEP 15 1914 RESEARCH DEPT.

Monahan

~~How~~ How you

getting on with B type

crimping die for

Lyon

Expect to finish this die
on Monday or Tuesday
Monahan

Have you furnished the

A4s for Endurance

test with new die

Report on this sent
to you on Thurs
M

(27)

Mr. Edison

Please send me your scheming number for the following test

Monahan

366 K

6- A-4 Cells 7.9 Gram Pocket

Pressure 160 Tons New Crimping Die

Pressure with Flat die 120 Tons

Cells received to distribute Lithium

Nos. Sp72 to Sp77

B-4 Cells 367 K

6- B-4 cells 5.3 Gram Pocket

Pressure 80 Tons New Crimping Die

" Flat Die 60 Tons

Cells received to distribute Lithium

Hot

Cold

High rate

from Gen

Further Tests.

366 E After 10 hours (Test Note 477)

60 Amp. Dis. to 9 V.
90 " " " 8 V.
Cold at 30, 40 and 50 Amps.

367 E

7.5 Amp charging.

9/2/10.

HC

70 E 343 E - 344 E

Pt. E WW 1-2-3-4. Pt

[illegible] test ST [illegible]

[illegible]

[illegible]

9-22-14

File Expts.

366 E Run 2 6 Q4 Cells

	.1 Volt	.5 Volt	
	175	176.5	at Room Temp.
	175.5	177.5	
Run 1 in file	154	157	at 130° F.
	156	159	
	70	113	at 35° F.
	70	1.4	

C31

	1200	1200	1-

366 E — Run 1. — 6 Au Cells.

	1.V.	.5V.	
Cells revolved	225	231	All
to distribute	225.5	233.5	at
Li OH	225	232	normal
Crystals	225	231.7	temp.
	225	234	
	226.5	235	

Beginning with 2nd run these cells will run as follows:

1st two at normal temperature

2nd " " 130° F.

3rd " " 35° F.

C323

Smith =

The dont look right, & 2nd Room Proven at approximately

Mark these 6 Cells
366A 366B 366C 366D
366E 366F

See reply on charge sheet report for 9/23/14

Fc.

378E 1 gram pockets 2 at
300 atmos pressure
CH #5 Die

379E 1 gram Cookies 2 at 200
atmosphere
CH #5 Die

380E 4 gram pkts 2 at 125
atmosphere
CH #5 Die

Ruth Ray

C341

9/28/16.

TAE # 240 A4 Cells ED-SP-A and ED-SP-B

" 351 " Cell # 25431

" 353 " Cells Sp 62 and Sp 63

" 354 " " 9210 B and 9211 B

Run all of the above cells as follows

3 runs, charge 12 hours 30 amp to 100 amp to .5V.

Then 5 " overcharges + normal rate discharges

at 130° F.

TAE # 333X B-Te 1008-1009

" 334X " 1006-1007

" 335X " 1012-1013

" 336X " 1010-1011

Give these 3 runs charging normally

and discharging at 7.5 amp to .5V.

TAE # 352 B4 Cells Sp 64 and Sp 65.

" 355 " " Sp 68 " Sp 69.

3 runs normal, over charge discharge 30 amp to .5V. (35)

9/30/14.

H.C.

HE # 354 Au CCl Sp 70-71.
Charge 12 hours 30 amp. discharge
at 100 amp to 0.5 volt per cell.

ZAE # 370 Au CCl Sp 48-49
Run at normal rates and 12 hour
charges at 35° F. hr.

H.H.S.

Smith

370 E

Put the Cells A 4
without any nickel plating
on Cold steel

S

10/5/14.

O.H.C.

Put new his. and new solution with daily production for 1997 to 2000 inclusive.

[illegible]

10/10/11.

N.C.

Cut out JAE Exp. #294 Tubes Nos. E456 and E457.

JAE Exp. #368 Tube Nos. E528-E529 hereafter to run on regular short tube schedule

JAE Exp. 349 (Fe) Pockets 455 to 462 to run at 800 ma discharge rate until further notice.

H/H

[October 13]

Smith Cut out 357E = 362E
363E

Give 359 360 361 some 130° runs

Some high rate runs 100 amp—

Give some high dischg rates to 366 group
100 amp—

What is 333X 334X 335X & 336X
I cant make out what they are.—

Find out from Archer the loading weights
of 372 373 374 375 376 377

[redacted]

[9]

Smith

What are 367 group-

[411]

Smith. Give 343 + 344 —

Some 130° Runs + some 750 rate runs

Stop Bremith Cells where there are two 72 to each Nickel + have Monahan give you some new Irons made with the new #4 die giving only Edge crimp — + Go ahead again

Open up 354 + 353. I think there has been a mix up, either both have irons with the new #4 die, or 353 is marked wrong put them back on test again after you have found out,

suspected + found OK [illegible]

[42]

10/14/15.

H.C.

Put new lin and new solution in Jc Exp pocket 487 to HWO n.c. JAE #328.

O.O.T.S.

TAE Exp's 343 - 10/13/14 6/2/1914

10/10/14
Order given verbally 10/13/14

H.C.

J.A.E. Exp. 342 Pocket 443-444
Give 10 hot runs 130°F.
Then put on regular schedule.

J.A.E. Exp. 343 Pocket 441-442
Cut out

JAE 357 Pocket 469-472
" 362 " 507-510
" 363 " 511-512
Cut out

JAE 359 Au Ecc 9367B-68B
" 360 " F1-F2
" 361 " F7-F8
Give 10 hot runs 130°
Then 3 normal runs
" 10 runs discharging at 100 Amp
Then normal until further notice (44)

(2) 10/15/10.

J.R.E. #366 Au Sec Sp.72 - Sp.77

Give 10' runs at 100 Amp.

Then normal until further notice

[illegible]

[45]